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SEA POWER OF THE UNITED STATES.

BY CHARLES H. CRAMP.

THE discussion of the elements and effects of sea power evoked by Captain Mahan's books has been fruitful of suggestion as to the aggregate of navies and the political consequences of superiority at sea, but little has been said of the individuality of ships. This, of course, is from the point of view of the statesman and the diplomatist, but the share which the designer and builder of ships has in the production of sea power remains to be examined.

Primarily it is worth while to remark that Captain Mahan's theme is by no means new, the real merit of his books resting in the fact that he has given a new force to old and well-known facts. Long ago the wisdom and foresight of Englishmen discerned the value of sea power before they possessed it, and Lord Bacon made it the subject of an essay as luminous as it was prophetic. This essay occurs in his work on the "True Greatness of Kingdoms and Estates," and the following pithy extract serves to exhibit the train of thought:

"To be master of the sea is an abridgement of a monarchy. We see the great effects of battles by sea; the Battle of Actium decided the Empire of the World; the Battle of Lepanto arrested the greatness of the Turk. There be many examples where sea fights have been final to the War. . . . This much is certain, that he who commands the sea is at great liberty and may take as much or as little of the war as he will, whereas those that be strongest by land are many times nevertheless in great straits. Surely at this day with us of Europe the vantage of strength at sea (which is one of the doweries of this Kingdom of Great Britain) is great, because most of the kingdoms of Europe are not merely inland, but girt with the sea most part of their compass, and because the wealth of both Indies seems in great part but an accessory to the command of the Seas."

The phrase here is indeed Baconian, but the thought is as fresh now as it was then, and in the concluding sentence one may find

a prophecy of the British conquest of India, and the necessity of keeping open the sea road. Captain Mahan's work, however, loses none of its merit from the fact that Bacon "blazed the way" for him ; on the contrary he is rather to be congratulated on having so distinguished a predecessor.

Leaving the diplomatists and the strategists to pursue their generalizations, I will try to point out the office of the naval architect and builder in the creation and maintenance of sea power.

In a recent interview published in a British journal, Captain Mahan with much pith and force described the basis of maritime supremacy by saying that the battleship is to fleets what infantry is to an army ; but when pressed by the reporter to particularize the type which he considered most effective, the captain declined to offer an opinion. This abstention was creditable both to his sound judgment and good taste. There are many types of battleships, each one with ardent partisans, and had Captain Mahan expressed a predilection for one type it would have been taken as a challenge by the adherents of all the others. This exhibits good judgment ; while on the point of good taste he is quite properly content to leave questions of design and construction to naval architects and builders.

There are some considerations affecting type and size of battleships which are of general interest and sufficiently non-technical to be easily comprehended by the average reader. I shall confine my observations to this class of subjects, because the purely technical questions involved in planning and constructing ships could be made neither interesting nor instructive to the readers of a popular magazine.

Necessarily in conformity to prevailing ideas and practice the employment of battleships for the enforcement of sea power involves their operation in fleets or squadrons. The experience of war may and probably will modify prevailing ideas and set a limit to the number of battleships that can be safely or effectively manœuvred in squadron. It is more than probable that at a very early stage of action the commanding officer of a modern battleship will find it necessary to signal for every captain to do the best he can. Possibly fleet or squadron tactics as now received and understood will be found to impede or even destroy the efficiency of modern battleships.

No action having occurred between fleets of modern battle-ships, the tactical conditions must be somewhat conjectural or at least theoretical; but the experience of peace drills and manœuvres has demonstrated that the elements of difficulty and danger due to modern appliances as compared with the conditions of the great sea-fights of history have been multiplied many fold. For example, at Trafalgar the "Victory," "Teméraire," and "Redoubtable" were foul of each other for a considerable period, and some historians say that the "Bucentaure," Admiral Villeneuve's flagship, was also foul of the bunch at one time. None of these ships of the line sustained any injury worth mentioning from the fouling alone.

I presume no one imagines that three or four modern battle-ships could be foul of each other for many minutes before some of them would begin to sink from the effects of contact alone, and irrespective of any execution done by their batteries or torpedoes. This ever present danger is equally great from friend and from foe, and the fact that it must be vastly increased by the circumstances of action will devolve upon the commander of the fleet and upon each one of his captains responsibilities which Rodney and Nelson and their captains never dreamed of.

These facts suggest a wide range of problems embracing not only tactics, which is outside of my province, but design, structure, manœuvring appliances—in short, everything that pertains to handiness, controllability under various conditions, and ultimate safety after a maximum of injury. The fate of the "Victoria" demonstrated that subdivision into water-tight compartments is useless if communication between any number of them is left free, and that water-tight doors, at least as arranged in that ship, cannot be closed against much head of in-rushing water. It also demonstrated the fact that the tactical diameters of ships, as ascertained by trial singly in smooth water, and under the most favorable conditions, cannot be depended on in fleet manœuvres at sea.

Above all it demonstrated that captains differ in capacity and in promptness, and that such difference operating in the brief time allotted to a single manœuvre may easily be fatal to a ship or, in action, to a fleet. This is a case of the personal equation; the operation of the human factor, which is always unequal to an immeasurable degree if we consider the possible extremes of capacity and incapacity—but at best always subject to error, and hence

calculated to defeat or mar in greater or less degree the efficiency of the most skilfully designed and most perfectly constructed mechanical devices. This is a fundamental fact, having its origin in the organic weaknesses of human nature, and hence unavoidable. At best its consequences can only be mitigated.

Last November in a paper read before the American Society of Naval Architects, discussing the practicable size of ships, I used the following language :

“There is another limitation to practicable size which has not been mentioned—the ship may become too large for the captain. It is the fact that while we may increase the dimensions of ships the size of man is a fixed quantity. I mean this in the physical as well as the mental sense. A ship is not like an army which can be divided in sections, each capable of independent action. She must be commanded and manœuvred in one piece and by one man.

“I have during many years of observation and experience in my profession seen so much of the human factor under such circumstances (circumstances placing the lives of so many men in a ship at the mercy of one man), that the elimination of it in every possible direction has become almost a passion with me. In any ship design it is the first principle with me to provide as many absolute and unchangeable qualities of performance and safety as possible and to place them beyond manipulation.”

For the reasons that I have already stated these observations originally made with reference to trans-Atlantic passenger vessels apply with ten-fold force to battleships. As the speed of any fleet is that of its slowest ship, so will its manœuvring power be limited by the capacity of its poorest captain. As it might easily happen that the slowest or least handy ship and the poorest captain would be joined, the quality of the other ships and the ability of the other officers would go for nothing.

In view of the complex character of the ships themselves and the difficulty and danger of manœuvring them under the most favorable conditions, as pointed out, the experience of the first general action will demonstrate the necessity of having all the battleships in a fleet as nearly alike as possible in size, type, and capacity of performance. Such provision would not equalize the personal factor of different commanding officers, but it would at least give them all an equal chance at the start. For this reason I have always considered it unwise to multiply types or to seriously modify those which the best judgment we are now able to form approves. The practice of the English, French, Russians, and Germans has been contrary to this idea.

Each new administration of their navies has brought in new types, until their navy lists present an almost bewildering variety. For example the present Mediterranean fleet of England includes ten battleships, comprising six different types, and ranging in speed from the old "Dreadnaught" of 12 knots to the "Hood" of 16½. Of these six types four are singly represented, namely: the "Dreadnaught," old-fashioned double-turreted monitor; the "Sanspareil," sister-ship to the late "Victoria"; the "Ramillies," modern barbette battleship, and the "Hood" modern double-turret battle-ship. Another type has two representatives, the "Nile" and "Trafalgar," double-turret battleships, 2,000 tons smaller than the "Hood"; while the sixth type has four representatives, the "Anson," "Camperdown," "Collingwood," and "Howe," barbette battleships, of the Admiral class, from 3,500 to 4,500 tons smaller than the "Ramillies." The testimony in the "Victoria" Court of Inquiry showed not only the difference in the capacity of captains already referred to, but also considerable difference between the several types of ships themselves as to handiness, even at a manœuvring speed of eight knots, which was dictated by the easy natural draught speed of the slowest ship, the "Dreadnaught." It is not easy to imagine what the consequences of such discrepancy in the ability and promptness of officers or in the power and handiness of the different ships would be under the vastly altered conditions of action. Of course the English have been accumulating different types during many years of active construction under different and disagreeing admiralities, and having the ships on hand must use them, no matter how motley the resulting fleet.

These observations bring us to a survey of the comparative situation of the United States in this respect. Our navy has not accumulated an assortment of battleship types, and hence is free to pursue the desirable policy of uniformity. Our very first attempt at battleship design produced a type which I consider the fairest compromise of all divergent qualities and necessities yet reached anywhere. The resulting ship carries on a displacement of 10,400 tons armor and armament superior to British ships of 14,150 tons, is equal to them in manœuvring speed, and much quicker and handier under helm.

Our second effort produced a ship which is in some respects a modification of the first. The changes are mainly in the direc-

tion of greater free-board and a knot more of speed, involving 1,000 tons more displacement, by which the all-around sea-going efficiency is expected to be increased; but as a fighting ship pure and simple I think no one contends that the "Iowa" is an improvement upon the "Indiana" class. Without going into detail of the differences between the two ships, I will say generally that the "Indiana" class is able to combat any first-rate battleship afloat as to armor and armament; she has as much speed as will ever be needed for manœuvring purposes, and her coal capacity is sufficient for any cruise that the policy of the United States will ever require in war.

When to these offensive and defensive qualities is added the fact that the "Indiana" developed on her preliminary trial a readiness of response and fidelity of direction under helm little short of marvellous in view of her dimensions and weight, she becomes by great odds the handiest first-rate battleship afloat. In the language of her navigating officer on that occasion, "she steered like a pilot boat." I submit that it does not require the training of a naval tactician to see that a fleet of ten "Indians," compact, handy ships, alike in all leading qualities, would have the ten diverse and unequal battleships of the British Mediterranean fleet at an initial disadvantage of tremendous effect, and this without taking account of individual superiority.

These considerations seem conclusive against multiplication of types and in favor of adhering to one which so plainly meets the requirements of our national situation and policy.

The composition of a battleship fleet under such conditions would minimize the tactical dangers and difficulties referred to earlier, but these would still remain very great, and nothing can mitigate them except frequent and arduous drill in squadron of evolution, so that our captains may become familiar with their weapons before being called upon to use them in actual battle. There will be scant opportunity to drill a battleship squadron after the outbreak of war. From this point of view it is to be regretted that Secretary Tracy's programme of 1890, contemplating eight battleships, was cut down to three, and sound policy dictates its early revival.

Passing now to another branch of the subject, I think it a matter of regret that some of the most distinguished advocates of the battleship policy have deemed it a part of the argument to

depreciate the value of cruisers and commerce destroyers as an element of sea power. Captain Mahan does this by inference, rather than expressly; but the Secretary of the Navy in his admirable report for 1893 (pp. 37, 38), pointedly questions the military value of unarmored vessels. He says:

"The military value of a commerce-destroying fleet is easily overrated. Cruisers directed against an enemy's wealth afloat are capable of doing great damage; . . . but unsupported by ships of the line their operations are never decisive of a war. During the twenty years from 1792 to 1812 French cruisers and privateers captured many thousands of British vessels and cargoes, but these captures operated more to provoke a spirit of determined hostility among the British people than to create such distress or alarm as would put an end to hostilities. English line-of-battle ships instead of scattering to convoy merchant vessels, hunted and destroyed the French vessels of war at the Nile, at Cape St. Vincent, and Trafalgar. In the mean time, in spite of her losses of merchant ships and their cargoes, England continued to grow rich by her commerce. . . .

"Our own Civil War furnishes a more recent and familiar proof of my statement. The cruises of the *Alabama* and her sister-ships were uncommonly successful. Semmes rivalled the exploits of Jean Bar and Du Guay-Trouin. His success delighted the Confederates, but it did not benefit their cause. . . . In the mean time in spite of depredations American commerce flourished. Commerce destroying was irritating, but it accomplished nothing. It would have been ineffectual even if the Confederates had possessed ten times as many cruisers, unsupported as they were by line-of-battle-ships."

Secretary Herbert's argument of facts here is ingeniously deployed, but his point of view seems limited to the special conditions which he has in mind. In both cases he cites—England's contest with Napoleon, and our Civil War—the struggle was for life. Napoleon's success as he had planned it would have relegated England to the status of Denmark or Holland; while the consequences that would have attended the success of the Confederacy cannot be measured. In the one case it was England or nothing, in the other case the Union or nothing. In either case the superior naval power could afford to let its commerce go by the board if necessary in order to employ its fleets in strategic operations bearing directly upon the fortunes of the struggle. It is true that French cruisers and privateers captured many English merchant ships and cargoes. But in turn the English cruisers captured so many French ships of their class that by the end of the Napoleonic era a great many, perhaps a majority, of the British frigates in commission were of French build, or new ships rebuilt on captured French models; so there was some

compensation, and as for French commerce the English cruisers simply swept the sea clean of it. Nor am I prepared to agree with Secretary Herbert's light estimate of the effects produced by the "*Alabama*" and her consorts. It is true that they did not decide the struggle, but they made it infinitely more difficult, costly, and painful. If they did not materially benefit the Confederacy they did help England to an amazing extent. Coming just as they did, at a turning point where new materials of construction and new devices were becoming factors in the contest for commercial supremacy, the Confederate cruisers cleared the seas of our old merchant marine, and, before we could recover from the blow, England had occupied the ground.

In view of this far-reaching result, the operations of the Confederate cruisers cannot be fairly estimated on the basis of their immediate devastations. The Geneva Tribunal awarded \$15,500,000 in settlement of the direct damage they did to the United States aided and abetted by England. The question of consequential damage, which far surpassed the other in importance, was ruled out of court. We got the mess of pottage; England got the birthright. That has been the case with every treaty we have negotiated with England except the treaty of Independence.

Viewed in the light of these notorious historical facts, it is clear that no theory can be sound that leaves the Confederate cruisers out of the category of sea power. The fact that their operations inured to the benefit of England rather than of the Confederacy was not accidental. On the contrary it was with deliberate purpose to that end that they were built in English yards, armed with English cannon, coaled with English coal, and manned by English seamen. The Confederate flag that they flew, so far as it pretended to represent the practical object of their existence, was a fraud. Their destruction of our commerce may not have helped the Confederate cause, but it operated beyond measure to promote England's dominion of the sea.

It is worth while to pursue this survey of the value of cruisers as an element of sea power by recalling briefly some incidents of a gratifying period in our own naval history.

In 1812 we had three frigates of forty-four guns, three of thirty-six guns, and two of thirty-two guns, together with nine sloops and brigs ranging from the "*Hornet*" of eighteen guns

to the "Enterprise" of twelve. There was no ship of the line. Yet this little fleet took the offensive in the face of England's sea power at its zenith, and, aided by a swarm of privateers, not only ravaged her commerce, but shocked the British sense as it had never been shocked before by repeated victories in duels between cruisers of equal rate. Commodore Porter did what all the cruisers of France had not been able to do, when he destroyed the British whale fishery in the Pacific. He lost his ship in battle against a superior force, it is true, but not until no more British whaleships were left for him to destroy. Johnston Blakeley, in the "New Wasp" of eighteen guns, cruised right in the chops of the Channel, often in sight of the English shore, and sunk two British men-of-war of his own class, besides destroying many merchantmen and sending at least one valuable prize home. Warrington in the "Peacock," and Biddle in the "Hornet," eighteen-gun sloops, made similar cruises in the East Indies and off the African coast.

I do not think there can be any question that the operations of our cruisers in that war materially aided to prepare the British public mind for the peace of 1815. Apart, however, from these historical facts there is an element in the peculiar political and geographical situation of the United States which imparts to the terms sea power a meaning different from that contemplated by any other nation. England employs sea power to keep open the roads of her colossal commerce, to maintain touch with her outlying possessions and dependencies and to enforce her status as a first-rate power in the European system, which her army alone could not do. France and Russia desire sea power as a counterbalance to England and in furtherance of ulterior designs which await only opportunity or pretext for development. There are signs which indicate that this pretext or opportunity may not be long deferred.

In no such probable or possible complications can the United States be involved. If she ever fights again it will be to assert the dignity of her flag, to vindicate existing rights against aggression, or to enforce the principles of international law. From this point of view but two nations can be our foes within any reasonable range of probability. These are Spain and England. In a war with Spain our strategy would necessarily be offensive, with territorial operations confined to the West Indies and our

cruising fleet directed against the commerce of the Philippines. In a war with England our battleships would be required for coast defence, and to break blockades, while our cruisers would find employment on every sea within their radius of action. There can never be invasion of the United States on any scale sufficient to make our territory the theatre of considerable military operations. An enterprising enemy possessed of commanding sea power would confine his activity to forays upon unprotected seaboard towns and communities, and to blockades of our more important commercial ports. Hence except for manning shore batteries or in repelling descents upon the coast our army, regular and volunteer, would be without occupation so far as defence is concerned. The bulk of the responsibility, and with it the laurels of success, would fall to the share of the navy.

This fact is well understood by our possible enemies. Hence their attitude toward the United States and their bearing in any controversy with us will be exactly regulated by our capacity for naval defence and reprisal. The meaning of sea power to the United States, therefore, is mainly of deterrent significance. That is to say, the possession of a fairly powerful and quickly mobile naval force by the United States, so constituted that part of it would be instantly available for vigorous defence against the attacks of hostile battleships, and the other part for swift and summary reprisals upon the enemy's commerce, would materially affect the tenor of diplomacy and avert war. On the contrary the absence or insufficiency of such equipment would invite war.

The view which the British Admiralty takes of the value of cruisers and commerce-destroyers as elements of sea power is strikingly embodied in their latest designs of that class, the "Powerful" and "Terrible." These are to be cruising ships pure and simple, lightly armed and wholly unarmored, and yet they are of 14,200 tons displacement, which is a trifle larger than the "Royal Sovereign" type of battleship. They are intended to be "destroyers of commerce-destroyers," and the logic of their existence is simply that of an answer to the "Columbia" and "Minneapolis." They would, of course, prey upon the commerce of an enemy, but that object in their design is rather incidental. Their primary mission will be to protect the British merchant marine by hunting down and destroying hostile cruisers at sea to prey upon commerce. Doubtless two more "Columbias" on our side would

be answered by another pair of "Powerfuls." If asked to offer an opinion as to the "Powerful" class, I should probably say that they seem overgrown. Their designed speed will not enable them to catch the "Minneapolis," while their first cost and cruising expense must be considerably greater.

With all due respect to the judgment of Secretary Herbert, who during his legislative career had more to do with the authorization and financial provision for the new navy than any other one statesman of the period, I emphatically dissent from his views as to the value of unarmored cruisers in the sum-total of sea power; and such dissent, as I have tried to show, has much broader foundation in logic for the United States than for any other nation. When I speak of cruisers in this sense I mean commerce destroyers proper, of the "Columbia" and "Minneapolis" class, and armored vessels of high speed and great endurance, like the "New York" and "Brooklyn," which, though not quite as fast as the "Columbia" and "Minneapolis," have speed and endurance enough to overhaul any commercial ship afloat, except a very few of the latest trans-Atlantic greyhounds. And I would by all means include in a subordinate but still important capacity the "Baltimore" class.

As for vessels ranging from the gunboat classes up, excepting the class of the "Baltimore," possibly we have enough of them. When the "Raleigh" and "Cincinnati" and the new gunboats are finished, and the "Chicago" is provided with modern engines, the navy will have one cruiser of 5,500 tons, six of from 4,000 to 4,500 tons, four of about 3,000 tons, three of 2,000 tons, three gunboats of 1,700 tons, and six of from 870 to 1,200 tons, available for general sea police duty. All the old ships will have disappeared three years from now, so that the main burden of peace cruising or sea police duty will fall upon the 23 vessels I have enumerated. It will probably be the policy of future administrations to keep most of the larger cruisers, both armored and unarmored, in readiness for service, rather than actively employed in ordinary times, and the same will be true of our battleships except as they may be from time to time engaged in squadrons of drill and evolution.

Events of the past three or four years have kept our available force of smaller cruisers and gunboats busy in all parts of the world, and it is a question whether the 23 vessels of the classes

referred to can do the work of the future with sufficient margin for necessary overhaul and repair, because it is well known that ships, like men, run down rapidly with overwork. Be that as it may, I will not contend that the cruisers and gunboats of the smaller classes constitute a very important element of sea power for war purposes or as a deterrent force. But I maintain that the larger protected cruisers of the "Baltimore" class, the commerce destroyers proper, and the armored cruisers do constitute such an element of the first importance, and that sound national policy dictates a considerable increase in their number concurrently with the development of an effective fleet of battleships.

Returning to Captain Mahan, it seems but just to say that the chief value of his books—as, indeed, it was apparently his principal object in writing them—lies in the stimulus they have given to universal public opinion as to the absolute necessity of adequate naval strength to every maritime power which aspires to commercial rank and profit. He has demonstrated with the force of a syllogism that one cannot exist without the other. This is a great public service, and though his theme was of necessity mainly based upon European history, Captain Mahan's deductions and conclusions are none the less valuable as a guide to the naval policy of the United States.

Opinions naturally differ as to what the details of that policy should be so far as the programme of construction is concerned, but men qualified to judge are practically unanimous in the conclusion that we should proceed much further before calling a halt. There is also a consensus of opinion that in the "Indiana" class we have struck the type of battleship, in the "New York" or "Brooklyn" the type of armored cruiser, and in the "Columbia" and "Minneapolis" the type of commerce destroyer respectively best suited to our national needs.

Question as to the advisability of multiplying purely harbor defence ships of the "Monitor" or "Monterey" types, or of building a considerable fleet of torpedo boats and torpedo cruisers, though important, are subordinate to the topic of battleships, armored cruisers, and commerce destroyers. That the number of all three of these latter types should be increased hardly requires argument. For my own part I have not advised and would not advise the adoption of a fixed shipbuilding programme calculated to cover future operations for any considerable period. But I would

and do advise adherence within conservative limits to types which have not only proved satisfactory to our own naval authorities on trial or in service, but which have repeatedly been pronounced by the most competent foreign judges who have personally examined them to be superior to anything of similar class abroad.

We have made great and rapid progress during eight years of naval reconstruction, but we have not yet rebuilt our navy. In fact about all we can reasonably say is that we have conclusively demonstrated our domestic capacity to rebuild it.

This grand and growing development of the shipbuilding art, with the enormous impetus it has given to cognate and contributory industries in every part of the realm of usefulness, is the contribution of the naval architect and the marine engineer to the sea power of the United States.

To the brave men who make up the *personnel* of our navy may safely be left the task of using whenever duty calls the tremendous weapons we have made for them to enforce that sea power.

CHARLES H. CRAMP.